What is claimed is:

1. A method for separating charged sample components in a liquid sample comprising

introducing a liquid sample containing charged components into a first reservoir of a microfluidic device having a first microchannel extending between, and in fluid communication with, the first and a second reservoir, and a second channel extending between, and in fluid communication with, a third and a fourth reservoir, said two channels intersecting at a junction,

creating a pressure differential between the second reservoir and each of the first, third and fourth reservoirs, effective to move sample from the first reservoir through the junction, toward the second reservoir, and simultaneously, to move liquid contained in the separation channel, on opposite sides of said junction, toward the second reservoir, and

applying a potential difference between the third and fourth reservoirs, to produce electrophoretic separation of charged sample components present in the sample junction, as the charged components migrate from the junction toward the fourth reservoir in said second channel.

2. The method of claim 1, wherein said charged sample components including both positively and negatively charged species.

3. The method of claim 1, which further includes during said applying step, applying a potential difference between the first and the third reservoir, and between the second and the third reservoirs, effective to move charged species toward the first and second reservoirs from the separation channel in fluid communication with the third reservoir.

4. The method of claim 1, which further includes detecting one or more detectable characteristics of separated channel components, as they migrate in the separation channel toward the fourth reservoir.

5. A microfluidic system for separating charged sample components in a liquid sample comprising

a microfluidics device formed in a generally planar substrate and having (i) a first microchannel extending between, and in fluid communication with, a first and a second reservoir, and (ii) a second channel extending between, and in fluid communication with, a third and a fourth reservoir, said two channels intersecting at a junction,

a pressure-differential source operatively connected to said reservoirs for creating a pressure differential between the second reservoir and each of the first, third and fourth reservoirs, effective to move sample contained in the first reservoir through the junction, toward the second reservoir, and simultaneously, to move liquid contained in the separation channel, on opposite sides of said junction, toward the second reservoir, and

a voltage source operatively connected to said third and fourth reservoirs for applying a voltage potential between the third and fourth reservoirs, effective to produce electrophoretic separation of charged sample components present in the sample junction, as the charged components migrate from the junction toward the fourth reservoir in said second channel.

6. The system of claim 5, further comprising a control unit operatively connected to the pressure-differential source and the voltage source, for controlling the pressure differential and voltage potential applied to said reservoirs.

7. The system of claim 6, wherein the voltage source is operatively connected to the first and second reservoirs, for applying a voltage potential across the first and second reservoirs, while a voltage potential is applied across the third and fourth reservoirs, effective to move charged species toward the first and second reservoirs from the separation channel in fluid communication with the third reservoir, as sample components are moving in the separation channel towards the fourth reservoir.

8. The system of claim 5, wherein the first and second channels intersect to form a cross.

9. The system of claim 5, wherein the first channel includes a pair of arms that intersect the second channel at axially offset positions along the second channel, forming a region along a portion of the second channels between the intersections thereof with the two arms of the first channel.

10. The system of claim 5, wherein the first and second channels have widths and depths in the range of from about 1 μm to 200 μm.

11. The system of claim 10, wherein the first and second channels have widths and depths in the range of from about 30 μm to 80 μm.

12. The system of claim 5, wherein said channels have lengths in the range of 3 mm to 50 cm.

13. The system of claim 5, which further includes a detector positioned for analyzing characteristics of sample components moving within the second channel.

14. The system of claim 5, which further includes a pair of detectors positioned along the second channel on opposite sides of said junction, for analyzing characteristics of sample components moving within the second channel.